The listing of the claims will replace all prior versions, and listings, of claims in the application:

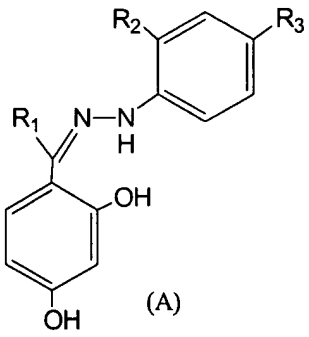
Listing of Claims:

Claims 1-33 (canceled).

Claim 34 (New). Nitrogen-oxygen-carbon polymers obtained by condensation of a 4-{1-[(2,4-di(substituted)-phenyl)-hydrazono]-alkyl}-benzene-1,3-diol with a phenol or a 3- substituted phenol or a 3,5-disubstituted phenol and formaldehyde or paraformaldehyde in the presence of either a basic (e.g. NaOH) or acid (e.g. HCl) catalyst in water/alcohol mixtures as solvent and at a temperature comprised between 20-150°C and having an average molecular weight comprised between 1000 and 50000, with the proviso that the 3-substituted phenol can not be resorcinol.

Claim 35 (New). Polymers according to claim 34 wherein the 4-{1-[(2,4-di(substituted)-phenyl)-hydrazono]-alkyl}-benzene-1,3-diol is a compound of formula

(A):

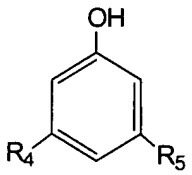


(A)

wherein R_1 is chosen in the group consisting of: hydrogen and a hydrocarbon radical, having from 1 to 10 carbon atoms, possibly halogenated;

R_2 and R_3 each independently represent an electron-withdrawing group selected in the group consisting of hydrogen, halogen, acyl, ester, carboxylic acid, formyl, nitrile, sulphonic acid, linear or branched alkyl or aryl groups, having from 1 to 15 carbon atoms, optionally functionalised with halogens or joined to each other to form one or more condensed cycles with the phenyl ring, and nitro groups.

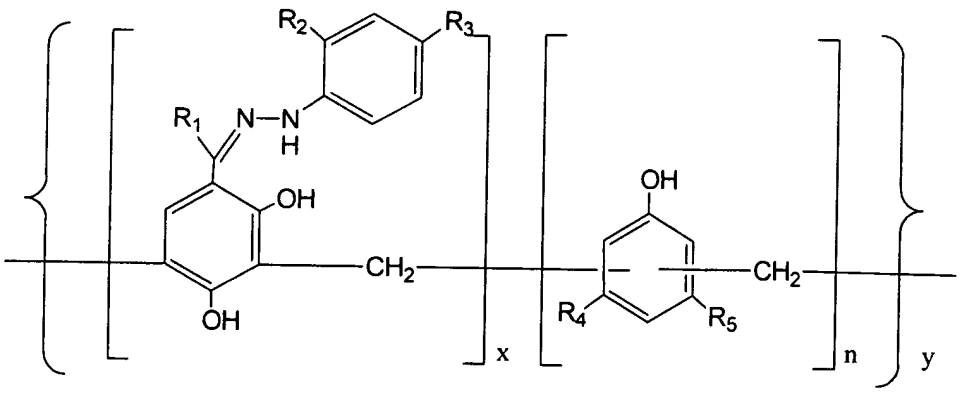
Claim 36 (New). Polymer according to claim **34** wherein the 3,5-disubstituted phenol is a compound of formula (B):



(B)

wherein R_4 and R_5 each independently represent an electron-donating group selected in the group consisting of hydrogen, hydroxyl, ether, amines, aryl and linear and branched alkyl groups, having from 1 to 15 carbon atoms, with the proviso that the 3-substituted phenol can not be resorcinol.

Claim 37 (New). Polymers according to Claim 36 having general formula (C)



(C)

wherein y can vary from 2 to 120, x can vary between 1 and 2, n can vary between 1 and 3 and R_1, R_2, R_3, R_4 and R_5 are as above defined.

Claim 38 (New). Metal complexes consisting of a polymer according to Claim 34 and a metal salt.

Claim 39 (New). Metal complexes according to Claim 38 wherein the metal salt is chosen in the group consisting of iron-, cobalt- and nickel-carboxylates, -halides, -alcoholates, -acetylacetonates, -formates, -oxalates, -malonates, and analogous organic salts and mixtures thereof or -carbonates, -oxides and -bicarbonates, and mixtures thereof.

Claim 40 (New). Complexes according to Claim 39 chosen in the group consisting of: Fe-, Co- and Ni-acetates (and mixture thereof).

Claim 41 (New). Catalysts consisting of the complexes according to claim 38 wherein the metal is reduced either in the solid state with H_2 or in fluid solution systems with appropriate reducing agents.

Claim 42 (New). Catalysts consisting of the complexes according to claim **38** wherein the said metal complexes are pyrolysed at a temperature between 500 and 1000 °C, preferentially 800 °C, under inert gas protection (for example N_2, Ar) for about 2 hours.

Claim 43 (New). Electrodes (anodes and cathodes) consisting of the catalysts according to Claim 41 and a suitable conductive support.

Claim 44 (New). Anodes consisting of the catalysts according to Claim 41 and comprising binary or ternary combinations of Fe, Co and Ni and a suitable conductive support.

Claim 45 (New). Cathodes consisting of the catalysts according to Claim 41 and comprising Ni or Co and a suitable conductive support.

Claim 46 (New). A process for preparing a nitrogen-oxygen-carbon polymer

according to Claim 34 wherein said reaction is carried out by condensation of a 4-{1-[(2,4-di(substituted)-phenyl)-hydrazono]-alkyl}-benzene-1,3-diol with a 3,5-disubstituted phenol and formaldehyde or paraformaldehyde in the presence of a basic catalysts.

Claim 47 (New). A process according to claim 46 wherein said reaction is carried out in the presence of an acid catalyst.

Claim 48 (New). A process according to claim 46 wherein said reaction is carried out in the temperature range from about 20 to about 150 °C and in the pH range from about 1 to about 14.

Claim 49 (New). A process according to claim 46 wherein said reaction is carried out in either a one-pot or cascade procedure using as separated components a 4-acyl/formyl-benzene-1,3-diol, a 2,4-disubstituted phenylhydrazine, a 3,5-disubstituted phenol and formaldehyde or paraformaldehyde.

Claim 50 (New). A process for preparing a complex according to claim 38 by dissolving a polymer according to Claim **34** and one or more salts in an appropriate solvent or mixture of solvents, preferentially acetone, in the temperature range from about 20 °C to about 60 °C and submitting the obtained product to reduction..

Claim 51 (New). A process according to Claim 50 wherein a mixture of metal salts chosen in the group consisting of nickel(II), iron(II) and cobalt(II) salts, alone or in

binary or ternary combinations in a preferred stoichiometric ratio is used.

Claim 52 (New). A process according to Claim 51 wherein the metal(s) loadings are in the range of about 0.5 % to about 10 % of the total elements plus metal weight.

Claim 53 (New). A process according to Claim **50** wherein the reduction step is performed with a flow of H_2 at a temperature between 350 °C and 400 °C for 1-2 hours.

Claim 54 (New). A process according to Claim 50 wherein the reduction step is performed on the complex dispersed in a solvent, with an aqueous solution of hydrazine, or a solution of a tetrahydroborate salt $[Y]BH_4$, wherein Y is Li^+, Na^+, K^+, NR_4^+, PPN^+ and R_4 is as defined in Claim 36 and PPN^+ is bis(triphenylphosphoranylidene)ammonium, at a temperature between 0 °C and 20 °C for 30 minutes-1 hour.

Claim 55 (New). A process for preparing a catalyst according to Claim 41 wherein the metal-doped polymers P-M are pyrolysed at temperatures ranging from 500 to 1000 °C under inert gas protection (for example N_2, Ar) for 1-2 hours.

Claim 56 (New). A process for preparing an electrode according to Claim 43 in the form of anode for fuel cells, involving mixing together the metal doped polymer materials and either a porous carbon support material or other conductive support materials prior to the reduction treatment according to Claim **53**.

Claim 57 (New). A process according to Claim **56** wherein a single metal or a binary or ternary combinations of nickel, iron and cobalt in a preferred stoichiometric ratio, with metal loadings in the range of about 0.5 % to about 10 % of the total elements plus metal weight are used.

Claim 58 (New). A process for preparing an electrode according to Claim 43 in the form of alcohol-tolerant cathodes for fuel cells, comprising mixing together the metal doped polymer and either a porous carbon support material or other conductive support materials prior to heat-treatment at temperatures ranging from about 500 °C to about 1000 °C under inert gas protection (for example N_2, Ar) for 1-2 hours.

Claim 59 (New). A process according to Claim 58 wherein the metal doped polymer contains a metal or a mixture of metals with metal loadings in the range of about 0.5 % to about 10 % of the total carbon plus metal weight.

Claim 60 (New). Anodes for Direct Oxidation Fuel cells (DOFC) or Direct Alcohol Fuel Cells (DAFC), formed with a catalysed carbon substrate according to Claim 56 containing metals chosen in the group consisting of iron, cobalt and nickel.

Claim 61 (New). Alcohol-tolerant cathodes for Direct Oxidation Fuel cells (DOFC), or Direct Alcohol Fuel Cells (DAFC), formed with a catalysed carbon substrate according to Claim 58, containing nickel.

Claim 62 (New). Direct Oxidation Fuel Cells (DOFC) or Direct Alcohol Fuel Cells (DAFC) comprising an anode and a cathode according to claim **44** and a solid electrolyte membrane, either anionic or cationic, capable of producing open circuit voltages (OCV) as high as 1.13 V and powers as high as 160 mW/cm^2 at ambient temperature and pressure.

Claim 63 (New). Polymer Electrolyte Fuel Cells (PEFC) fuelled with H_2 comprising an anode catalysed with iron, cobalt and nickel in a stoichiometric ratio with an overall metal loading between 0.5 and 8% wt according to Claim 44 capable of producing open circuit voltages (OCV) as high as 1.18 V and power densities as high as 300 mW/cm^2, in conjunction with a cathode of the present invention or a cathode of the state of the art and a solid electrolyte membrane of the state of art.

Claim 64 (New). Polymer Electrolyte Fuel Cells (PEFC) fuelled with H_2 comprising a cathode catalysed by nickel in loadings between 0.5 -7% wt according to Claim 45 capable of producing open circuit voltages (OCV) as high as 1.18 V and power densities as high as 300 mW/cm^2 in conjunction with an anode of the present invention or an anode of the state of the art and a solid electrolyte membrane of the state of art.

Claim 65 (New). Fuel cells comprising electrodes according to claim **43**.